

AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 1 to add reference numerals 45, 46, 47, 48, and 49 and lead lines therefor to indicate the locations of the foundation member, the first soil section, the second soil section, the removal device, and the return device, respectively.

Attachment: Replacement Sheet

REMARKS

Claims 1-18 are pending in the application, of which claims 6-10 are withdrawn.

By the foregoing Amendment, claims 1 and 11 are amended to better define the invention with respect to the prior art. Claim 1 also is amended to better conform to U.S. practice with respect to the structure of method claims. New claims 16-18 are added. The drawings are amended to add reference numerals 45, 46, 47, 48, and 49 and lead lines therefor to indicate the locations of the foundation member, the first soil section, the second soil section, the removal device, and the return device, respectively; and conforming amendments are made to the Specification. The Specification is also amended to add section headings and to correct the Abstract. These changes are believed not to introduce new matter, and entry of the Amendment is respectfully requested.

Based on the above Amendment and the following Remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections, and withdraw them.

Information Disclosure Statement

On page 3 of the Office Action, it is noted that the listing of references in the specification is not a proper information disclosure statement, and that therefore, unless the references in the specification have been cited by the examiner, they have not been considered.

A proper Information Disclosure Statement and accompanying Form PTO-1449 and reference copies were submitted on January 14, 2005. Copies of the Information Disclosure Statement and accompanying Form PTO-1449 and reference copies, as well as the date-stamped receipt therefor are submitted herewith.

Objection to the Declaration

On page 3 of the Office Action, the declaration was stated to be defective because the month of the foreign priority date was misspelled. This objection is respectfully traversed.

Applicant's counsel has reviewed MPEP §§ 602.01 and 602.02 cited in the Office Action and does not find any support therein for the assertion in the Office Action that a declaration is rendered defective by an obvious spelling error in the month of the foreign priority date. It is apparent from the declaration that the month is "February," as demonstrated by the fact that the Official Filing Receipt correctly lists the month of the foreign priority date as "February."

As Applicant's counsel has been unable to find any authority in the patent statute, the patent rules or the MPEP regarding the effect of such an obvious spelling error in the declaration, Applicant's counsel also consulted a senior legal advisor in the Office of Patent Legal Administration (Eugenia Jones) for guidance. According to Ms. Jones, no correction is required as the correct information is reflected in the Official Filing Receipt. A copy of the email correspondence between the senior legal advisor, counsel's assistant (Christopher Sorey), and counsel is submitted herewith for the Examiner's reference.

Objection to the Drawings

On page 4 of the Office Action, the drawings were objected to as not showing every feature of the invention specified in the claims. This objection is believed to be overcome by the amendments to the drawings, in which reference numerals 45, 46, 47, 48, and 49 and lead lines therefor to indicate the locations of the foundation member, the first soil section, the second soil

section, the removal device, and the return device, respectively. Conforming amendments are also made to the Specification.

Objections to the Specification

On pages 5-6 of the Office Action, the Abstract was objected to due to the inclusion of legal phraseology (“said”); and the Specification was objected to due to a lack of section headings and the inclusion of references to the claims in the Specification. These objections are believed to be overcome by the above amendments to the Specification and Abstract.

Rejections under 35 U.S.C. § 102

On page 9 of the Office Action, claims 1-5 were rejected under section 102(b) as being anticipated by Lindstrom et al.

The present invention as recited in claim 1 is directed to a method for making a foundation member in the ground, employing a device that includes a soil working implement for loosening the soil material in a soil area, a supply device for supplying a liquid to the loosened soil material, a mixing device for mixing the loosened soil material in the soil area with said liquids to form a settable suspension, and a removal device for removing suspension from a first section of the soil area and a return device for returning at least part of the removed suspension to a second section of the soil area.

Using the device to loosen the soil material, supply liquid to the loosened soil material, mix the loosened soil material with liquid to form a settable suspension, and remove at least a part of the

suspension from a first soil section of the soil area and return it to a second section of the soil area, a sedimentation process of the loosened soil material in the suspension can be effectively prevented. Therefore, a precise suspension mixture and in this way a high quality foundation member can be produced. By the operation of the mixing paddles and the soil auger of the soil working implement, the suspension circulation in the soil area is enhanced, leading to a particularly good intermixing of the suspension. Furthermore, this resulting stronger suspension circulation counteracts the sedimentation process effectively.

Additionally, the removal of the suspension taking place at a first section of the soil area into which the soil working implement is introduced generates a suction effect in a first section of the soil area, which together with the return of the removed suspension in a second section of the soil area enhances the circulation flow of the suspension preventing sedimentation and providing a good intermixing quality of the settable liquid with the loosened soil material in order to form a high quality foundation member.

A further enhancement of the recirculation and the intermixing of the suspension is achieved by the feature that the suspension being removed and returned into the soil area contains at least a part of the loosened soil material.

Lindstrom et al. discloses soil-cement compositions and methods of forming subterranean cementitious masses using the compositions. The soil-cement compositions are basically comprised of hydraulic cement, water present in the compositions in amounts sufficient to form slurries of the solids therein, a dispersant comprised of a mixture of sodium dihydrogen phosphate buffer, ferrous lignosulfonate, ferrous sulfate, tannic acid and soil.

Contrary to the present invention, Lindstrom et al. discloses an accumulation pit located at the top of the bore hole, from which excess soil-cement suspension is pumped off (column 5, lines 25 to 30), and which is formed by a separate tool other than the tool used for excavation of the foundation member. In other words, Lindstrom et al. does not teach or suggest removing at least a part of the suspension including at least a part of the loosened soil material from a first section of the soil area into which the soil working implement is introduced.

Also, the cross-sectional area of the pit formed by Lindstrom et al.'s tool is essentially larger than the cross-section of the bore hole. Therefore, there is almost no significant suction effect generated in the bore hole in order to improve the circulation of the suspension.

Furthermore, Lindstrom et al. does not disclose mixing paddles and a soil auger located on the drill string. Lindstrom et al. therefore cannot teach or suggest “introducing into a soil area a soil working implement having a drilling string with a soil auger thereon for loosening the soil material in the soil area” and “using a mixing device having mixing paddles located on the drilling string, mixing the loosened soil material in the soil area with a liquid to form a settable suspension” as recited in claim 1; or “providing a device for making a foundation member in the ground, comprising ... a soil working implement including a drilling string having a soil auger thereon for loosening soil material in a soil area” and “a mixing device including paddles located on the drilling string for mixing the loosened soil material in soil area with the liquid to form a settable suspension,” followed “introducing the soil working implement into a soil area to loosen the soil material therein” and “mixing the loosened soil material in the soil area with the liquid, using the mixing device, to form a settable suspension” as recited in claim 11.

Additionally, Lindstrom et al. does not describe the return of the suspension including at least a part of the loosened soil material. Instead, Lindstrom et al. discloses the return of a solution, wherein the solid parts have been removed by a solids-water-separator and a centrifuge separator. Therefore, there is no real circulation of a suspension comprising a mixture of liquid and loosened soil material as recited in claim 1, but merely only a transportation of soil material out of the bore hole.

Consequently, the decisive advantageous effects of the claimed method following from a cooperation of the specific arrangement of the removing and returning location of the suspension in combination with the supporting operation of the mixing paddles and the soil auger, particularly an effective circulation of the suspension with a strong upward flow, cannot be attained using the method of Lindstrom et al.

In view of the foregoing, it is respectfully submitted that the invention as recited in claim 1 and the claims depending therefrom is not anticipated by Lindstrom et al., and that the rejection should be withdrawn.

Rejections under 35 U.S.C. § 103

On page 11 of the Office Action, claims 11-15 were rejected under section 103(a) as being unpatentable over Lindstrom et al. in view of Kono et al.

The comments made above with respect to the rejection of claims 1-5 based on Lindstrom et al. are believed to be equally applicable to claims 11-15.

Kono et al. discloses methods for the construction of subterranean soil-cement structures in situ. The methods utilize techniques designed to prolong the period of time in which an auger machine can operate in a bore hole without encountering difficulty due to the hardening of the soil-cement mixture. The techniques utilized include a preparatory drilling phase during which a lubricating slurry may be injected. This preparatory drilling serves to break up the soil and particularly if a lubricating slurry is used, reduce friction so that final drilling may progress more quickly. After preparatory drilling, final drilling takes place. Final drilling is divided into a downward and an upward phase. Either hardening or non-hardening slurry may be introduced and consolidated with the soil during the downward phase, but only hardening slurry is typically utilized during the upward phase of final drilling.

However, Kono et al. does not describe removal of the suspension comprising the mixture of loosened soil material from a first section of the soil area into which the soil working implement is introduced and liquid, and the return of the suspension in another, second section in order to generate an effective recirculation flow so as to prevent sedimentation processes and to improve the intermixing quality of the suspension and therefore the quality of the foundation member.

In view of the foregoing, it is respectfully submitted that the invention as recited in claim 11 and the claims depending therefrom is patentable over Lindstrom et al. in combination with Kono et al., and that the rejection should be withdrawn.

Conclusion

All objections and rejections have been complied with, properly traversed, or rendered moot. Thus, it now appears that the application is in condition for allowance. Should any questions arise, the Examiner is invited to call the undersigned representative so that this case may receive an early Notice of Allowance.

Favorable consideration and allowance are earnestly solicited.

Respectfully submitted,

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Attachments: Copy of IDS submitted August 10, 2004
Copy of email correspondence with PTO Senior Legal Advisor Eugenia Jones